

LISTAGE DES SEQUENCES

<110> Institut Pasteur

<120> ANTIGÈNES DE PLASMODIUM FALCIPARUM ET LEURS APPLICATIONS VACCINALES
ET DIAGNOSTIQUES

<130> B5257AA_01.txt

<150> CA 2,345,206

<151> 2001-05-16

<150> CA 2,346,968

<151> 2001-05-23

<160> 18

<170> PatentIn version 3.1

<210> 1

<211> 192

<212> DNA

<213> Plasmodium falciparum

<400> 1

gaattccata tgcacgatta catatatgat gatcgatatct acaataatga taaagagaaa	60
aatgttataa aaagtgataa taaaaatggt ataaaaagtg ataataaaaa tgattataaa	120
aagtgtataa aaaatgttat aaaaagtgat aataaaaaatg ttataaaaag tgataataaa	180
aatgtggaat tc	192

<210> 2

<211> 351

<212> DNA

<213> Plasmodium falciparum

<400> 2

gaattcccag atcctcgaag taatgaccaa gaagatgcta ctgacgatgt tgtagaaaat	60
agtagagatg ataataatag tctctctaag agcgtagata atcaaagtaa tgttttaaat	120
agagaagatc ctattgcttc tgaaactgaa gttgtaagtg aacctgagga ttcaagtagg	180
ataatgacta cagaagttcc aagtactact gtaaaacccc ctgatgaaaa acgatctgaa	240
gaagtaggag aaaaagaagc taaagaaatt aaagtagaac ctgttgtagc aagagccatt	300
ggagaaccaa tggaaaattc tgtgagcgta cagtcccctc ctaaggaatt c	351

<210> 3

<211> 64

<212> PRT

<213> Plasmodium falciparum

<400> 3

Glu Phe His Met His Asp Tyr Ile Tyr Asp Asp Arg Ile Tyr Asn Asn
 1 5 10 15

Asp Lys Glu Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Ile Lys
 20 25 30

Ser Asp Asn Lys Asn Asp Tyr Lys Lys Cys Asn Lys Asn Val Ile Lys
 35 40 45

Ser Asp Asn Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Glu Phe
 50 55 60

<210> 4

<211> 117

<212> PRT

<213> Plasmodium falciparum

<400> 4

Glu Phe Pro Asp Pro Arg Ser Asn Asp Gln Glu Asp Ala Thr Asp Asp
 1 5 10 15

Val Val Glu Asn Ser Arg Asp Asp Asn Asn Ser Leu Ser Asn Ser Val
 20 25 30

Asp Asn Gln Ser Asn Val Leu Asn Arg Glu Asp Pro Ile Ala Ser Glu
 35 40 45

Thr Glu Val Val Ser Glu Pro Glu Asp Ser Ser Arg Ile Met Thr Thr
 50 55 60

Glu Val Pro Ser Thr Thr Val Lys Pro Pro Asp Glu Lys Arg Ser Glu
 65 70 75 80

Glu Val Gly Glu Lys Glu Ala Lys Glu Ile Lys Val Glu Pro Val Val
 85 90 95

Pro Arg Ala Ile Gly Glu Pro Met Glu Asn Ser Val Ser Val Gln Ser
 100 105 110

Pro Pro Lys Glu Phe
 115

<210> 5
<211> 5
<212> PRT
<213> Plasmodium falciparum

<400> 5

Asp Asn Lys Asn Val
1 5

<210> 6
<211> 5
<212> PRT
<213> Plasmodium falciparum

<400> 6

Asp Asn Lys Asn Asp
1 5

<210> 7
<211> 6
<212> PRT
<213> Plasmodium falciparum

<400> 7

Asp Lys Glu Lys Asn Val
1 5

<210> 8
<211> 7
<212> PRT
<213> Plasmodium falciparum

<400> 8

Lys Ser Asp Asn Lys Asn Val
1 5

<210> 9
<211> 1524
<212> DNA
<213> Plasmodium falciparum

<220>
<221> CDS
<222> (1) .. (1524)
<223>

<400> 9
 atg aag acg aca aaa gaa aat gac aat aat aac ata gta cat tat gta 48
 Met Lys Thr Thr Lys Glu Asn Asp Asn Asn Ile Val His Tyr Val
 1 5 10 15

gat tgg ata aac cag att ttt aaa aag aat tct tta caa tgt gat tta 96
 Asp Trp Ile Asn Gln Ile Phe Lys Lys Asn Ser Leu Gln Cys Asp Leu
 20 25 30

tat ttt ttg gat gac aac aaa gaa aaa gat gtt agt aag aaa aga aaa 144
 Tyr Phe Leu Asp Asp Asn Lys Glu Lys Asp Val Ser Lys Lys Arg Lys
 35 40 45

gct caa ttg aag gat gaa tat gat aat ata tca agg agc aaa gaa aat 192
 Ala Gln Leu Lys Asp Glu Tyr Asp Asn Ile Ser Arg Ser Lys Glu Asn
 50 55 60

att aat aat tcc aaa aaa ata aaa aat gaa tta agt ata aaa gat aat 240
 Ile Asn Asn Ser Lys Lys Ile Lys Asn Glu Leu Ser Ile Lys Asp Asn
 65 70 75 80

atg cac gat tac ata tat gat gat cgt atc tac aat aat gat aaa gag 288
 Met His Asp Tyr Ile Tyr Asp Asp Arg Ile Tyr Asn Asn Asp Lys Glu
 85 90 95

aaa aat gtt ata aaa agt gat aat aaa aat gtt ata aaa agt gat aat 336
 Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Ile Lys Ser Asp Asn
 100 105 110

aaa aat gat tat aaa aag tgt aat aaa aat gtt ata aaa agt gat aat 384
 Lys Asn Asp Tyr Lys Lys Cys Asn Lys Asn Val Ile Lys Ser Asp Asn
 115 120 125

aaa aat gtt ata aaa agt gat aat aaa aat gtt ata aaa agt gat aat 432
 Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Ile Lys Ser Asp Asn
 130 135 140

aaa aat gtt ata aaa agt gat tat aaa agt gat gat aga aat gct tgt 480
 Lys Asn Val Ile Lys Ser Asp Tyr Lys Ser Asp Asp Arg Asn Ala Cys
 145 150 155 160

gat att tat aaa agt aat aaa aaa aat gtt cct gat aat tgc cat ata 528
 Asp Ile Tyr Lys Ser Asn Lys Lys Asn Val Pro Asp Asn Cys His Ile
 165 170 175

tat gat gat aat agt tca gtt gaa aat tta gat gga aaa aat aaa tta 576
 Tyr Asp Asp Asn Ser Ser Val Glu Asn Leu Asp Gly Lys Asn Lys Leu
 180 185 190

aat aat ata agg aac ata cat aat gat aac tca tct tca tgc gat ata 624
 Asn Asn Ile Arg Asn Ile His Asn Asp Asn Ser Ser Cys Asp Ile
 195 200 205

tcc gat ata aaa agt gaa gat gaa tat ata gaa cca tat gaa aaa aag 672
 Ser Asp Ile Lys Ser Glu Asp Glu Tyr Ile Glu Pro Tyr Glu Lys Lys
 210 215 220

aat gaa gaa aat ata aat gaa tat aag aat aag aaa aat ata gcc aat Asn Glu Glu Asn Ile Asn Glu Tyr Lys Asn Lys Lys Asn Ile Ala Asn 225 230 235 240	720
gaa aat ata aaa gaa gga aag agt tca att tat aat gat gaa cat aat Glu Asn Ile Lys Glu Gly Lys Ser Ser Ile Tyr Asn Asp Glu His Asn 245 250 255	768
tat aat tca tta tta tat aat tct tgt aat ggt gaa ata agt aag atc Tyr Asn Ser Leu Leu Tyr Asn Ser Cys Asn Gly Glu Ile Ser Lys Ile 260 265 270	816
aac aaa ata agt agt cat aat aat att gat aat aat atg gat aat tat Asn Lys Ile Ser Ser His Asn Asn Ile Asp Asn Asn Met Asp Asn Tyr 275 280 285	864
aat acg ttt gca aat gtg aat aat ttt ata ata tat tcc tca gat gat Asn Thr Phe Ala Asn Val Asn Asn Phe Ile Ile Tyr Ser Ser Asp Asp 290 295 300	912
gaa gat aat ata tca aat tat tat aat ggt aaa gac gta tta aat gat Glu Asp Asn Ile Ser Asn Tyr Tyr Asn Gly Lys Asp Val Leu Asn Asp 305 310 315 320	960
gag att atg ttc cct ata aaa ttt aat ttt gaa aaa tta aaa aaa aat Glu Ile Met Phe Pro Ile Lys Phe Asn Phe Glu Lys Leu Lys Lys Asn 325 330 335	1008
att tat gta ata gag cat ata gac aaa ata tat tat gat aca ttt tta Ile Tyr Val Ile Glu His Ile Asp Lys Ile Tyr Tyr Asp Thr Phe Leu 340 345 350	1056
aat aaa aat cca agt gaa aaa agt gtt ttt atg aat gat gaa tct act Asn Lys Asn Pro Ser Glu Lys Ser Val Phe Met Asn Asp Glu Ser Thr 355 360 365	1104
ggt tat ttg aaa aat gat gtg aat gac aaa tgt gtt gtt gat aat ata Gly Tyr Leu Lys Asn Asp Val Asn Asp Lys Cys Val Val Asp Asn Ile 370 375 380	1152
aat gtt att aat cct tct agt gtg aat acg ttg agt aat att tca aat Asn Val Ile Asn Pro Ser Ser Val Asn Thr Leu Ser Asn Ile Ser Asn 385 390 395 400	1200
att agg aat gaa aaa ata gaa aat aat aat aag aat gaa aaa tta ata Ile Arg Asn Glu Lys Ile Glu Asn Asn Asn Lys Asn Glu Lys Leu Ile 405 410 415	1248
aaa tca tat cct aca caa tca aaa aat gtt atg agt aca ttt tcc ttt Lys Ser Tyr Pro Thr Gln Ser Lys Asn Val Met Ser Thr Phe Ser Phe 420 425 430	1296
tgg aat att gaa aag gag aca ttt ata aca aaa cct ttg tat gca caa Trp Asn Ile Glu Lys Glu Thr Phe Ile Thr Lys Pro Leu Tyr Ala Gln 435 440 445	1344

aat ttg aga aaa aaa caa ttt agt tta tta gat gaa tct gaa gag atg 1392
 Asn Leu Arg Lys Lys Gln Phe Ser Leu Leu Asp Glu Ser Glu Glu Met
 450 455 460

ata aga aat tat tca tct aat caa tat tct ata aaa ttt gta cca aga 1440
 Ile Arg Asn Tyr Ser Ser Asn Gln Tyr Ser Ile Lys Phe Val Pro Arg
 465 470 475 480

cat tta tta tat gta atg agt caa gtt gct tct cga tcc ttt ttt gat 1488
 His Leu Leu Tyr Val Met Ser Gln Val Ala Ser Arg Ser Phe Phe Asp
 485 490 495

cct tta tat aga aag cag tta ttt ttt cgt tac taa 1524
 Pro Leu Tyr Arg Lys Gln Leu Phe Phe Arg Tyr
 500 505

<210> 10
 <211> 507
 <212> PRT
 <213> Plasmodium falciparum

<400> 10

Met Lys Thr Thr Lys Glu Asn Asp Asn Asn Asn Ile Val His Tyr Val
 1 5 10 15

Asp Trp Ile Asn Gln Ile Phe Lys Lys Asn Ser Leu Gln Cys Asp Leu
 20 25 30

Tyr Phe Leu Asp Asp Asn Lys Glu Lys Asp Val Ser Lys Lys Arg Lys
 35 40 45

Ala Gln Leu Lys Asp Glu Tyr Asp Asn Ile Ser Arg Ser Lys Glu Asn
 50 55 60

Ile Asn Asn Ser Lys Lys Ile Lys Asn Glu Leu Ser Ile Lys Asp Asn
 65 70 75 80

Met His Asp Tyr Ile Tyr Asp Asp Arg Ile Tyr Asn Asn Asp Lys Glu
 85 90 95

Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Ile Lys Ser Asp Asn
 100 105 110

Lys Asn Asp Tyr Lys Lys Cys Asn Lys Asn Val Ile Lys Ser Asp Asn
 115 120 125

Lys Asn Val Ile Lys Ser Asp Asn Lys Asn Val Ile Lys Ser Asp Asn
 130 135 140

Lys Asn Val Ile Lys Ser Asp Tyr Lys Ser Asp Asp Arg Asn Ala Cys
 145 150 155 160

Asp Ile Tyr Lys Ser Asn Lys Lys Asn Val Pro Asp Asn Cys His Ile
 165 170 175

Tyr Asp Asp Asn Ser Ser Val Glu Asn Leu Asp Gly Lys Asn Lys Leu
 180 185 190

Asn Asn Ile Arg Asn Ile His Asn Asp Asn Ser Ser Ser Cys Asp Ile
 195 200 205

Ser Asp Ile Lys Ser Glu Asp Glu Tyr Ile Glu Pro Tyr Glu Lys Lys
 210 215 220

Asn Glu Glu Asn Ile Asn Glu Tyr Lys Asn Lys Lys Asn Ile Ala Asn
 225 230 235 240

Glu Asn Ile Lys Glu Gly Lys Ser Ser Ile Tyr Asn Asp Glu His Asn
 245 250 255

Tyr Asn Ser Leu Leu Tyr Asn Ser Cys Asn Gly Glu Ile Ser Lys Ile
 260 265 270

Asn Lys Ile Ser Ser His Asn Asn Ile Asp Asn Asn Met Asp Asn Tyr
 275 280 285

Asn Thr Phe Ala Asn Val Asn Asn Phe Ile Ile Tyr Ser Ser Asp Asp
 290 295 300

Glu Asp Asn Ile Ser Asn Tyr Tyr Asn Gly Lys Asp Val Leu Asn Asp
 305 310 315 320

Glu Ile Met Phe Pro Ile Lys Phe Asn Phe Glu Lys Leu Lys Lys Asn
 325 330 335

Ile Tyr Val Ile Glu His Ile Asp Lys Ile Tyr Tyr Asp Thr Phe Leu
 340 345 350

Asn Lys Asn Pro Ser Glu Lys Ser Val Phe Met Asn Asp Glu Ser Thr
 355 360 365

Gly Tyr Leu Lys Asn Asp Val Asn Asp Lys Cys Val Val Asp Asn Ile
 370 375 380
 Asn Val Ile Asn Pro Ser Ser Val Asn Thr Leu Ser Asn Ile Ser Asn
 385 390 395 400
 Ile Arg Asn Glu Lys Ile Glu Asn Asn Asn Lys Asn Glu Lys Leu Ile
 405 410 415
 Lys Ser Tyr Pro Thr Gln Ser Lys Asn Val Met Ser Thr Phe Ser Phe
 420 425 430
 Trp Asn Ile Glu Lys Glu Thr Phe Ile Thr Lys Pro Leu Tyr Ala Gln
 435 440 445
 Asn Leu Arg Lys Lys Gln Phe Ser Leu Leu Asp Glu Ser Glu Glu Met
 450 455 460
 Ile Arg Asn Tyr Ser Ser Asn Gln Tyr Ser Ile Lys Phe Val Pro Arg
 465 470 475 480
 His Leu Leu Tyr Val Met Ser Gln Val Ala Ser Arg Ser Phe Phe Asp
 485 490 495
 Pro Leu Tyr Arg Lys Gln Leu Phe Phe Arg Tyr
 500 505

<210> 11
 <211> 5050
 <212> DNA
 <213> Plasmodium falciparum

<220>
 <221> CDS
 <222> (1) .. (4464)
 <223>

<220>
 <221> CDS
 <222> (4557) .. (4634)
 <223>

<220>
 <221> CDS
 <222> (4751) .. (4837)
 <223>

<220>
 <221> CDS
 <222> (4973)..(5047)
 <223>

<400> 11
 atg aaa ggg aaa atg aat atg tgt ttg ttt ttt ttc tat tct ata tta 48
 Met Lys Gly Lys Met Asn Met Cys Leu Phe Phe Phe Tyr Ser Ile Leu
 1 5 10 15
 tat gtt gta tta tgt acc tat gta tta ggt ata agt gaa gag tat ttg 96
 Tyr Val Val Leu Cys Thr Tyr Val Leu Gly Ile Ser Glu Glu Tyr Leu
 20 25 30
 aag gaa agg ccc caa ggt tta aat gtt gag act aat aat aat aat aat 144
 Lys Glu Arg Pro Gln Gly Leu Asn Val Glu Thr Asn Asn Asn Asn Asn
 35 40 45
 aat aat aat aat aat aat agt aat agt aac gat gcg atg tct ttt gta 192
 Asn Asn Asn Asn Asn Asn Ser Asn Ser Asn Asp Ala Met Ser Phe Val
 50 55 60
 aat gaa gta ata agg ttt ata gaa aac gag aag gat gat aaa gaa gat 240
 Asn Glu Val Ile Arg Phe Ile Glu Asn Glu Lys Asp Asp Lys Glu Asp
 65 70 75 80
 aaa aaa gtg aag ata ata tct aga cct gtt gag aat aca tta cat aga 288
 Lys Lys Val Lys Ile Ile Ser Arg Pro Val Glu Asn Thr Leu His Arg
 85 90 95
 tat cca gtt agt tct ttt ctg aat atc aaa aag tat ggt agg aaa ggg 336
 Tyr Pro Val Ser Ser Phe Leu Asn Ile Lys Lys Tyr Gly Arg Lys Gly
 100 105 110
 gaa tat ttg aat aga aat agt ttt gtt caa aga tca tat ata agg ggt 384
 Glu Tyr Leu Asn Arg Asn Ser Phe Val Gln Arg Ser Tyr Ile Arg Gly
 115 120 125
 tgt aaa gga aaa aga agc aca cat aca tgg ata tgt gaa aat aaa ggg 432
 Cys Lys Gly Lys Arg Ser Thr His Thr Trp Ile Cys Glu Asn Lys Gly
 130 135 140
 aat aat aat ata tgt att cct gat aga cgt gta caa tta tgt ata aca 480
 Asn Asn Asn Ile Cys Ile Pro Asp Arg Arg Val Gln Leu Cys Ile Thr
 145 150 155 160
 gct ctt caa gat tta aaa aat tca gga tct gaa acg act gat aga aaa 528
 Ala Leu Gln Asp Leu Lys Asn Ser Gly Ser Glu Thr Thr Asp Arg Lys
 165 170 175
 tta tta aga gat aaa gta ttt gat tca gct atg tat gaa act gat ttg 576
 Leu Leu Arg Asp Lys Val Phe Asp Ser Ala Met Tyr Glu Thr Asp Leu
 180 185 190
 tta tgg aat aaa tat ggt ttt cgt gga ttt gat gat ttt tgt gac gat 624
 Leu Trp Asn Lys Tyr Gly Phe Arg Gly Phe Asp Asp Phe Cys Asp Asp
 195 200 205

gta aaa aat agt tat tta gat tat aaa gat gtt ata ttt gga acc gat Val Lys Asn Ser Tyr Leu Asp Tyr Lys Asp Val Ile Phe Gly Thr Asp 210 215 220	672
tta gat aaa aat aat ata tca aag tta gta gag gaa tca tta aaa cgt Leu Asp Lys Asn Asn Ile Ser Lys Leu Val Glu Glu Ser Leu Lys Arg 225 230 235 240	720
ttt ttt aaa aaa gat agt agt gta ctt aat cct act gct tgg tgg aga Phe Phe Lys Lys Asp Ser Ser Val Leu Asn Pro Thr Ala Trp Trp Arg 245 250 255	768
agg tat gga aca aga cta tgg aaa act atg ata cag cca tat gct cat Arg Tyr Gly Thr Arg Leu Trp Lys Thr Met Ile Gln Pro Tyr Ala His 260 265 270	816
tta gga tgt aga aaa cct gat gag aat gaa cct cag ata aat aga tgg Leu Gly Cys Arg Lys Pro Asp Glu Asn Glu Pro Gln Ile Asn Arg Trp 275 280 285	864
att ctg gaa tgg ggg aaa tat aat tgt aga tta atg aag gag aaa gaa Ile Leu Glu Trp Gly Lys Tyr Asn Cys Arg Leu Met Lys Glu Lys Glu 290 295 300	912
aaa ttg tta aca gga gaa tgt tct gtt aat aga aaa aaa tct gac tgc Lys Leu Leu Thr Gly Glu Cys Ser Val Asn Arg Lys Lys Ser Asp Cys 305 310 315 320	960
tca acc gga tgt aat aat gag tgt tat acc tat agg agt ctt att aat Ser Thr Gly Cys Asn Asn Glu Cys Tyr Thr Tyr Arg Ser Leu Ile Asn 325 330 335	1008
aga caa aga tat gag gtc tct ata tta gga aaa aaa tat att aaa gta Arg Gln Arg Tyr Glu Val Ser Ile Leu Gly Lys Lys Tyr Ile Lys Val 340 345 350	1056
gta cga tat act ata ttt agg aga aaa ata gtt caa cct gat aat gct Val Arg Tyr Thr Ile Phe Arg Arg Lys Ile Val Gln Pro Asp Asn Ala 355 360 365	1104
ttg gat ttt tta aaa tta aat tgt tct gag tgt aag gat att gat ttt Leu Asp Phe Leu Lys Leu Asn Cys Ser Glu Cys Lys Asp Ile Asp Phe 370 375 380	1152
aaa ccc ttt ttt gaa ttt gaa tat ggt aaa tat gaa gaa aaa tgt atg Lys Pro Phe Phe Glu Phe Glu Tyr Gly Lys Tyr Glu Glu Lys Cys Met 385 390 395 400	1200
tgt caa tca tat att gat tta aaa atc caa ttt aaa aat aat gat att Cys Gln Ser Tyr Ile Asp Leu Lys Ile Gln Phe Lys Asn Asn Asp Ile 405 410 415	1248
tgt tca ttt aat gct caa aca gat act gtt tct agc gat aaa aga ttt Cys Ser Phe Asn Ala Gln Thr Asp Thr Val Ser Ser Asp Lys Arg Phe 420 425 430	1296

tgt ctt gaa aag aaa gaa ttt aaa cca tgg aaa tgt gat aaa aat tct Cys Leu Glu Lys Lys Glu Phe Lys Pro Trp Lys Cys Asp Lys Asn Ser 435 440 445	1344
ttt gaa aca gtt cat cat aaa ggt gta tgt gtg tca ccg aga aga caa Phe Glu Thr Val His His Lys Gly Val Cys Val Ser Pro Arg Arg Gln 450 455 460	1392
ggt ttt tgt tta gga aat ttg aac tat cta ctg aat gat gat att tat Gly Phe Cys Leu Gly Asn Leu Asn Tyr Leu Leu Asn Asp Asp Ile Tyr 465 470 475 480	1440
aat gta cat aat tca caa cta ctt atc gaa att ata atg gct tct aaa Asn Val His Asn Ser Gln Leu Leu Ile Glu Ile Ile Met Ala Ser Lys 485 490 495	1488
caa gaa gga aag tta tta tgg aaa aaa cat gga aca ata ctt gat aac Gln Glu Gly Lys Leu Leu Trp Lys Lys His Gly Thr Ile Leu Asp Asn 500 505 510	1536
cag aat gca tgc aaa tat ata aat gat agt tat gtt gat tat aaa gat Gln Asn Ala Cys Lys Tyr Ile Asn Asp Ser Tyr Val Asp Tyr Lys Asp 515 520 525	1584
ata gtt att gga aat gat tta tgg aat gat aac aac tct ata aaa gtt Ile Val Ile Gly Asn Asp Leu Trp Asn Asp Asn Asn Ser Ile Lys Val 530 535 540	1632
caa aat aat tta aat tta att ttt gaa aga aat ttt ggt tat aaa gtt Gln Asn Asn Leu Asn Leu Ile Phe Glu Arg Asn Phe Gly Tyr Lys Val 545 550 555 560	1680
gga aga aat aaa ctc ttt aaa aca att aaa gaa tta aaa aat gta tgg Gly Arg Asn Lys Leu Phe Lys Thr Ile Lys Glu Leu Lys Asn Val Trp 565 570 575	1728
tgg ata tta aat aga aat aaa gta tgg gaa tca atg aga tgt gga att Trp Ile Leu Asn Arg Asn Lys Val Trp Glu Ser Met Arg Cys Gly Ile 580 585 590	1776
gac gaa gta gat caa cgt aga aaa act tgt gaa aga ata gat gaa cta Asp Glu Val Asp Gln Arg Arg Lys Thr Cys Glu Arg Ile Asp Glu Leu 595 600 605	1824
gaa aac atg cca caa ttc ttt aga tgg ttt tca caa tgg gca cat ttc Glu Asn Met Pro Gln Phe Phe Arg Trp Phe Ser Gln Trp Ala His Phe 610 615 620	1872
ttt tgt aag gaa aaa gaa tat tgg gaa tta aaa tta aat gat aaa tgt Phe Cys Lys Glu Lys Glu Tyr Trp Glu Leu Lys Leu Asn Asp Lys Cys 625 630 635 640	1920
aca ggt aat aat gga aaa tcc tta tgt cag gat aaa aca tgt caa aat Thr Gly Asn Asn Gly Lys Ser Leu Cys Gln Asp Lys Thr Cys Gln Asn 645 650 655	1968

gtg tgt act aat atg aat tat tgg aca tat act aga aaa tta gct tat Val Cys Thr Asn Met Asn Tyr Trp Thr Tyr Thr Arg Lys Leu Ala Tyr 660 665 670	2016
gaa ata caa tcc gta aaa tat gat aaa gat aga aaa tta ttt agt ctt Glu Ile Gln Ser Val Lys Tyr Asp Lys Asp Arg Lys Leu Phe Ser Leu 675 680 685	2064
gct aaa gac aaa aat gta act aca ttt tta aag gaa aat gca aaa aat Ala Lys Asp Lys Asn Val Thr Thr Phe Leu Lys Glu Asn Ala Lys Asn 690 695 700	2112
tgt tct aat ata gat ttt aca aaa ata ttc gat cag ctt gac aaa ctc Cys Ser Asn Ile Asp Phe Thr Lys Ile Phe Asp Gln Leu Asp Lys Leu 705 710 715 720	2160
ttt aag gaa aga tgt tca tgt atg gat aca caa gtt tta gaa gta aaa Phe Lys Glu Arg Cys Ser Cys Met Asp Thr Gln Val Leu Glu Val Lys 725 730 735	2208
aac aaa gaa atg tta tct ata gac tca aat agt gaa gat gcg aca gat Asn Lys Glu Met Leu Ser Ile Asp Ser Asn Ser Glu Asp Ala Thr Asp 740 745 750	2256
ata agt gag aaa aat gga gag gaa gaa tta tat gta aat cac aat tct Ile Ser Glu Lys Asn Gly Glu Glu Glu Leu Tyr Val Asn His Asn Ser 755 760 765	2304
gtg agt gtc gca agt ggt aat aaa gaa atc gaa aag agt aag gat gaa Val Ser Val Ala Ser Gly Asn Lys Glu Ile Glu Lys Ser Lys Asp Glu 770 775 780	2352
aag caa cct gaa aaa gaa gca aaa caa act aat gga act tta acc gta Lys Gln Pro Glu Lys Glu Ala Lys Gln Thr Asn Gly Thr Leu Thr Val 785 790 795 800	2400
cga act gac aaa gat tca gat aga aac aaa gga aaa gat aca gct act Arg Thr Asp Lys Asp Ser Asp Arg Asn Lys Gly Lys Asp Thr Ala Thr 805 810 815	2448
gat aca aaa aat tca cct gaa aat tta aaa gta cag gaa cat gga aca Asp Thr Lys Asn Ser Pro Glu Asn Leu Lys Val Gln Glu His Gly Thr 820 825 830	2496
aat gga gaa aca ata aaa gaa gaa cca cca aaa tta cct gaa tca tct Asn Gly Glu Thr Ile Lys Glu Glu Pro Pro Lys Leu Pro Glu Ser Ser 835 840 845	2544
gaa aca tta caa tca caa gaa caa tta gaa gca gaa gca caa aaa caa Glu Thr Leu Gln Ser Gln Glu Gln Leu Glu Ala Glu Ala Gln Lys Gln 850 855 860	2592
aaa caa gaa gaa gaa cca aaa aaa aaa caa gaa gaa gaa cca aaa aaa Lys Gln Glu Glu Glu Pro Lys Lys Lys Gln Glu Glu Glu Pro Lys Lys 865 870 875 880	2640

aaa caa gaa gaa gaa caa aaa cga gaa caa gaa caa aaa caa gaa caa Lys Gln Glu Glu Glu Gln Lys Arg Glu Gln Glu Gln Lys Gln Glu Gln	2688
885 890 895	
gaa gaa gaa gaa caa aaa caa gaa gaa gaa caa caa ata caa gat caa Glu Glu Glu Glu Gln Lys Gln Glu Glu Glu Gln Gln Ile Gln Asp Gln	2736
900 905 910	
tca caa agt gga tta gat caa tcc tca aaa gta gga gta gcg agt gaa Ser Gln Ser Gly Leu Asp Gln Ser Ser Lys Val Gly Val Ala Ser Glu	2784
915 920 925	
caa aat gaa att tct tca gga caa gaa caa aac gta aaa agc tct tca Gln Asn Glu Ile Ser Ser Gly Gln Glu Gln Asn Val Lys Ser Ser Ser	2832
930 935 940	
cct gaa gta gtt cca caa gaa aca act agt gaa aat ggg tca tca caa Pro Glu Val Val Pro Gln Glu Thr Thr Ser Glu Asn Gly Ser Ser Gln	2880
945 950 955 960	
gac aca aaa ata tca agt act gaa cca aat gag aat tct gtt gta gat Asp Thr Lys Ile Ser Ser Thr Glu Pro Asn Glu Asn Ser Val Val Asp	2928
965 970 975	
aga gca aca gat agt atg aat tta gat cct gaa aag gtt cat aat gaa Arg Ala Thr Asp Ser Met Asn Leu Asp Pro Glu Lys Val His Asn Glu	2976
980 985 990	
aat atg agt gat cca aat aca aat act gaa cca gat gca tct tta aaa Asn Met Ser Asp Pro Asn Thr Asn Thr Glu Pro Asp Ala Ser Leu Lys	3024
995 1000 1005	
gat gat aag aag gaa gtt gat gat gcc aaa aaa gaa ctt caa tct Asp Asp Lys Lys Glu Val Asp Asp Ala Lys Lys Glu Leu Gln Ser	3069
1010 1015 1020	
act gta tca aga att gaa tct aat gaa cag gac gtt caa agt aca Thr Val Ser Arg Ile Glu Ser Asn Glu Gln Asp Val Gln Ser Thr	3114
1025 1030 1035	
cca ccc gaa gat act cct act gtt gaa gga aaa gta gga gat aaa Pro Pro Glu Asp Thr Pro Thr Val Glu Gly Lys Val Gly Asp Lys	3159
1040 1045 1050	
gca gaa atg tta act tct ccg cat gcg aca gat aat tct gag tcg Ala Glu Met Leu Thr Ser Pro His Ala Thr Asp Asn Ser Glu Ser	3204
1055 1060 1065	
gaa tca ggt tta aat cca act gat gac att aaa aca act gat ggt Glu Ser Gly Leu Asn Pro Thr Asp Asp Ile Lys Thr Thr Asp Gly	3249
1070 1075 1080	
gtt gtt aaa gaa caa gaa ata tta ggg gga ggt gaa agt gca act Val Val Lys Glu Gln Glu Ile Leu Gly Gly Gly Glu Ser Ala Thr	3294
1085 1090 1095	

gaa aca tca aaa agt aat tta	gaa aaa cct aag gat	gtt gaa cct	3339
Glu Thr Ser Lys Ser Asn Leu	Glu Lys Pro Lys Asp	Val Glu Pro	
1100	1105	1110	
tct cat gaa ata tct gaa cct	gtt ctt tct ggt aca	act ggt aaa	3384
Ser His Glu Ile Ser Glu Pro	Val Leu Ser Gly Thr	Thr Gly Lys	
1115	1120	1125	
gaa gaa tca gag tta tta aaa	agt aaa tcg ata gag	acg aag ggg	3429
Glu Glu Ser Glu Leu Leu Lys	Ser Lys Ser Ile Glu	Thr Lys Gly	
1130	1135	1140	
gaa aca gat cct cga agt aat	gac caa gaa gat gct	act gac gat	3474
Glu Thr Asp Pro Arg Ser Asn	Asp Gln Glu Asp Ala	Thr Asp Asp	
1145	1150	1155	
gtt gta gaa aat agt aga gat	gat aat aat agt ctc	tct aat agc	3519
Val Val Glu Asn Ser Arg Asp	Asp Asn Asn Ser Leu	Ser Asn Ser	
1160	1165	1170	
gta gat aat caa agt aat gtt	tta aat aga gaa gat	cct att gct	3564
Val Asp Asn Gln Ser Asn Val	Leu Asn Arg Glu Asp	Pro Ile Ala	
1175	1180	1185	
tct gaa act gaa gtt gta agt	gaa cct gag gat tca	agt agg ata	3609
Ser Glu Thr Glu Val Val Ser	Glu Pro Glu Asp Ser	Ser Arg Ile	
1190	1195	1200	
atg act aca gaa gtt cca agt	act act gta aaa ccc	cct gat gaa	3654
Met Thr Thr Glu Val Pro Ser	Thr Thr Val Lys Pro	Pro Asp Glu	
1205	1210	1215	
aaa cga tct gaa gaa gta gga	gaa aaa gaa gct aaa	gaa att aaa	3699
Lys Arg Ser Glu Glu Val Gly	Glu Lys Glu Ala Lys	Glu Ile Lys	
1220	1225	1230	
gta gaa cct gtt gta cca aga	gcc att gga gaa cca	atg gaa aat	3744
Val Glu Pro Val Val Pro Arg	Ala Ile Gly Glu Pro	Met Glu Asn	
1235	1240	1245	
tct gtg agc gta cag tcc cct	cct aat gta gaa gat	gtt gaa aaa	3789
Ser Val Ser Val Gln Ser Pro	Pro Asn Val Glu Asp	Val Glu Lys	
1250	1255	1260	
gaa aca ttg ata tct gag aat	aat gga tta cat aat	gat aca cac	3834
Glu Thr Leu Ile Ser Glu Asn	Asn Gly Leu His Asn	Asp Thr His	
1265	1270	1275	
aga gga aat atc agt gaa aag	gat tta atc gat att	cat ttg tta	3879
Arg Gly Asn Ile Ser Glu Lys	Asp Leu Ile Asp Ile	His Leu Leu	
1280	1285	1290	
aga aat gaa gcg ggt agt aca	ata tta gat gat tct	aga aga aat	3924
Arg Asn Glu Ala Gly Ser Thr	Ile Leu Asp Asp Ser	Arg Arg Asn	
1295	1300	1305	

gga gaa atg aca gaa ggt agc gaa agt gat gtt gga gaa tta caa Gly Glu Met Thr Glu Gly Ser Glu Ser Asp Val Gly Glu Leu Gln 1310 1315 1320	3969
gaa cat aat ttt agc aca caa caa aaa gat gaa aaa gat ttt gac Glu His Asn Phe Ser Thr Gln Gln Lys Asp Glu Lys Asp Phe Asp 1325 1330 1335	4014
caa att gcg agc gat aga gaa aaa gaa gaa att caa aaa tta ctt Gln Ile Ala Ser Asp Arg Glu Lys Glu Glu Ile Gln Lys Leu Leu 1340 1345 1350	4059
aat ata gga cat gaa gag gat gaa gat gta tta aaa atg gat aga Asn Ile Gly His Glu Glu Asp Glu Asp Val Leu Lys Met Asp Arg 1355 1360 1365	4104
aca gag gat agt atg agt gat gga gtt aat agt cat ttg tat tat Thr Glu Asp Ser Met Ser Asp Gly Val Asn Ser His Leu Tyr Tyr 1370 1375 1380	4149
aat aat cta tca agt gaa gaa aaa atg gaa caa tat aat aat aga Asn Asn Leu Ser Ser Glu Glu Lys Met Glu Gln Tyr Asn Asn Arg 1385 1390 1395	4194
gat gct tct aaa gat aga gaa gaa ata ttg aat agg tca aac aca Asp Ala Ser Lys Asp Arg Glu Glu Ile Leu Asn Arg Ser Asn Thr 1400 1405 1410	4239
aat aca tgt tct aat gaa cat tca tta aaa tat tgt caa tat atg Asn Thr Cys Ser Asn Glu His Ser Leu Lys Tyr Cys Gln Tyr Met 1415 1420 1425	4284
gaa aga aat aag gat tta tta gaa aca tgt tct gaa gac aaa agg Glu Arg Asn Lys Asp Leu Leu Glu Thr Cys Ser Glu Asp Lys Arg 1430 1435 1440	4329
tta cat tta tgt tgt gaa ata tca gat tat tgt tta aaa ttt ttc Leu His Leu Cys Cys Glu Ile Ser Asp Tyr Cys Leu Lys Phe Phe 1445 1450 1455	4374
aat cct aaa tcg ata gaa tac ttt gat tgt aca caa aaa gaa ttt Asn Pro Lys Ser Ile Glu Tyr Phe Asp Cys Thr Gln Lys Glu Phe 1460 1465 1470	4419
gat gac cct aca tat aat tgt ttt aga aaa caa aga ttt aca agt Asp Asp Pro Thr Tyr Asn Cys Phe Arg Lys Gln Arg Phe Thr Ser 1475 1480 1485	4464
atgtcatggt ataaaaattaa aaacaatata cattaatatg ttaataaaaa aaataatata	4524
ttttttttctc tttttctttt tttttaatag gt atg cat tat att gcc ggg ggt Met His Tyr Ile Ala Gly 1490 1495	4577
ggt ata ata gcc ctt tta ttg ttt att tta ggt tca gcc agc tat Gly Ile Ile Ala Leu Leu Leu Phe Ile Leu Gly Ser Ala Ser Tyr 1500 1505 1510	4622

agg aag aat ttg taagaaaaaa aggatgaaga aatataaaca aaaatataaa 4674
Arg Lys Asn Leu

tatatgcata tatatttaag tattataaga acatatatat aaataaatat gtatatTTTT 4734

attttatttat tatagg gat gat gaa aaa gga ttc tac gat tct aat tta 4783
Asp Asp Glu Lys Gly Phe Tyr Asp Ser Asn Leu
1515 1520 1525

aat gat tct gct ttt gaa tat aat aat aat aaa tat aat aaa tta 4828
Asn Asp Ser Ala Phe Glu Tyr Asn Asn Asn Lys Tyr Asn Lys Leu
1530 1535 1540

cct tat atg tgtaaggaaa aaactaaaaa acaaaaaaaaa aaaaaaatat 4877
Pro Tyr Met

atatatatat atatatatTT acggatgcat ttccacattc ctattatttc ttattcttat 4937

aatttttatt atttatttat ttattttttt ttttc gta gtt gat caa caa ata 4990
Val Val Asp Gln Gln Ile
1545

aat gta gta aat tct gat tta tat tcg gag ggt att tat gat gac 5035
Asn Val Val Asn Ser Asp Leu Tyr Ser Glu Gly Ile Tyr Asp Asp
1550 1555 1560

aca acg aca ttt taa 5050
Thr Thr Thr Phe
1565

<210> 12
<211> 1568
<212> PRT
<213> Plasmodium falciparum

<400> 12

Met Lys Gly Lys Met Asn Met Cys Leu Phe Phe Phe Tyr Ser Ile Leu
1 5 10 15

Tyr Val Val Leu Cys Thr Tyr Val Leu Gly Ile Ser Glu Glu Tyr Leu
20 25 30

Lys Glu Arg Pro Gln Gly Leu Asn Val Glu Thr Asn Asn Asn Asn
35 40 45

Asn Asn Asn Asn Asn Asn Ser Asn Ser Asn Asp Ala Met Ser Phe Val
50 55 60

Asn Glu Val Ile Arg Phe Ile Glu Asn Glu Lys Asp Asp Lys Glu Asp
65 70 75 80

Lys Lys Val Lys Ile Ile Ser Arg Pro Val Glu Asn Thr Leu His Arg
 85 90 95

Tyr Pro Val Ser Ser Phe Leu Asn Ile Lys Lys Tyr Gly Arg Lys Gly
 100 105 110

Glu Tyr Leu Asn Arg Asn Ser Phe Val Gln Arg Ser Tyr Ile Arg Gly
 115 120 125

Cys Lys Gly Lys Arg Ser Thr His Thr Trp Ile Cys Glu Asn Lys Gly
 130 135 140

Asn Asn Asn Ile Cys Ile Pro Asp Arg Arg Val Gln Leu Cys Ile Thr
 145 150 155 160

Ala Leu Gln Asp Leu Lys Asn Ser Gly Ser Glu Thr Thr Asp Arg Lys
 165 170 175

Leu Leu Arg Asp Lys Val Phe Asp Ser Ala Met Tyr Glu Thr Asp Leu
 180 185 190

Leu Trp Asn Lys Tyr Gly Phe Arg Gly Phe Asp Asp Phe Cys Asp Asp
 195 200 205

Val Lys Asn Ser Tyr Leu Asp Tyr Lys Asp Val Ile Phe Gly Thr Asp
 210 215 220

Leu Asp Lys Asn Asn Ile Ser Lys Leu Val Glu Glu Ser Leu Lys Arg
 225 230 235 240

Phe Phe Lys Lys Asp Ser Ser Val Leu Asn Pro Thr Ala Trp Trp Arg
 245 250 255

Arg Tyr Gly Thr Arg Leu Trp Lys Thr Met Ile Gln Pro Tyr Ala His
 260 265 270

Leu Gly Cys Arg Lys Pro Asp Glu Asn Glu Pro Gln Ile Asn Arg Trp
 275 280 285

Ile Leu Glu Trp Gly Lys Tyr Asn Cys Arg Leu Met Lys Glu Lys Glu
 290 295 300

Lys Leu Leu Thr Gly Glu Cys Ser Val Asn Arg Lys Lys Ser Asp Cys
 305 310 315 320

Ser Thr Gly Cys Asn Asn Glu Cys Tyr Thr Tyr Arg Ser Leu Ile Asn
 325 330 335

Arg Gln Arg Tyr Glu Val Ser Ile Leu Gly Lys Lys Tyr Ile Lys Val
 340 345 350

Val Arg Tyr Thr Ile Phe Arg Arg Lys Ile Val Gln Pro Asp Asn Ala
 355 360 365

Leu Asp Phe Leu Lys Leu Asn Cys Ser Glu Cys Lys Asp Ile Asp Phe
 370 375 380

Lys Pro Phe Phe Glu Phe Glu Tyr Gly Lys Tyr Glu Glu Lys Cys Met
 385 390 395 400

Cys Gln Ser Tyr Ile Asp Leu Lys Ile Gln Phe Lys Asn Asn Asp Ile
 405 410 415

Cys Ser Phe Asn Ala Gln Thr Asp Thr Val Ser Ser Asp Lys Arg Phe
 420 425 430

Cys Leu Glu Lys Lys Glu Phe Lys Pro Trp Lys Cys Asp Lys Asn Ser
 435 440 445

Phe Glu Thr Val His His Lys Gly Val Cys Val Ser Pro Arg Arg Gln
 450 455 460

Gly Phe Cys Leu Gly Asn Leu Asn Tyr Leu Leu Asn Asp Asp Ile Tyr
 465 470 475 480

Asn Val His Asn Ser Gln Leu Leu Ile Glu Ile Ile Met Ala Ser Lys
 485 490 495

Gln Glu Gly Lys Leu Leu Trp Lys Lys His Gly Thr Ile Leu Asp Asn
 500 505 510

Gln Asn Ala Cys Lys Tyr Ile Asn Asp Ser Tyr Val Asp Tyr Lys Asp
 515 520 525

Ile Val Ile Gly Asn Asp Leu Trp Asn Asp Asn Asn Ser Ile Lys Val
 530 535 540

Gln Asn Asn Leu Asn Leu Ile Phe Glu Arg Asn Phe Gly Tyr Lys Val
545 550 555 560

Gly Arg Asn Lys Leu Phe Lys Thr Ile Lys Glu Leu Lys Asn Val Trp
565 570 575

Trp Ile Leu Asn Arg Asn Lys Val Trp Glu Ser Met Arg Cys Gly Ile
580 585 590

Asp Glu Val Asp Gln Arg Arg Lys Thr Cys Glu Arg Ile Asp Glu Leu
595 600 605

Glu Asn Met Pro Gln Phe Phe Arg Trp Phe Ser Gln Trp Ala His Phe
610 615 620

Phe Cys Lys Glu Lys Glu Tyr Trp Glu Leu Lys Leu Asn Asp Lys Cys
625 630 635 640

Thr Gly Asn Asn Gly Lys Ser Leu Cys Gln Asp Lys Thr Cys Gln Asn
645 650 655

Val Cys Thr Asn Met Asn Tyr Trp Thr Tyr Thr Arg Lys Leu Ala Tyr
660 665 670

Glu Ile Gln Ser Val Lys Tyr Asp Lys Asp Arg Lys Leu Phe Ser Leu
675 680 685

Ala Lys Asp Lys Asn Val Thr Thr Phe Leu Lys Glu Asn Ala Lys Asn
690 695 700

Cys Ser Asn Ile Asp Phe Thr Lys Ile Phe Asp Gln Leu Asp Lys Leu
705 710 715 720

Phe Lys Glu Arg Cys Ser Cys Met Asp Thr Gln Val Leu Glu Val Lys
725 730 735

Asn Lys Glu Met Leu Ser Ile Asp Ser Asn Ser Glu Asp Ala Thr Asp
740 745 750

Ile Ser Glu Lys Asn Gly Glu Glu Glu Leu Tyr Val Asn His Asn Ser
755 760 765

Val Ser Val Ala Ser Gly Asn Lys Glu Ile Glu Lys Ser Lys Asp Glu
770 775 780

Lys Gln Pro Glu Lys Glu Ala Lys Gln Thr Asn Gly Thr Leu Thr Val
 785 790 795 800

Arg Thr Asp Lys Asp Ser Asp Arg Asn Lys Gly Lys Asp Thr Ala Thr
 805 810 815

Asp Thr Lys Asn Ser Pro Glu Asn Leu Lys Val Gln Glu His Gly Thr
 820 825 830

Asn Gly Glu Thr Ile Lys Glu Glu Pro Pro Lys Leu Pro Glu Ser Ser
 835 840 845

Glu Thr Leu Gln Ser Gln Glu Gln Leu Glu Ala Glu Ala Gln Lys Gln
 850 855 860

Lys Gln Glu Glu Glu Pro Lys Lys Lys Gln Glu Glu Glu Pro Lys Lys
 865 870 875 880

Lys Gln Glu Glu Glu Gln Lys Arg Glu Gln Glu Gln Lys Gln Glu Gln
 885 890 895

Glu Glu Glu Glu Gln Lys Gln Glu Glu Glu Gln Gln Ile Gln Asp Gln
 900 905 910

Ser Gln Ser Gly Leu Asp Gln Ser Ser Lys Val Gly Val Ala Ser Glu
 915 920 925

Gln Asn Glu Ile Ser Ser Gly Gln Glu Gln Asn Val Lys Ser Ser Ser
 930 935 940

Pro Glu Val Val Pro Gln Glu Thr Thr Ser Glu Asn Gly Ser Ser Gln
 945 950 955 960

Asp Thr Lys Ile Ser Ser Thr Glu Pro Asn Glu Asn Ser Val Val Asp
 965 970 975

Arg Ala Thr Asp Ser Met Asn Leu Asp Pro Glu Lys Val His Asn Glu
 980 985 990

Asn Met Ser Asp Pro Asn Thr Asn Thr Glu Pro Asp Ala Ser Leu Lys
 995 1000 1005

Asp Asp	Lys Lys	Glu Val	Asp	Asp Ala	Lys Lys	Glu	Leu Gln Ser
1010			1015			1020	
Thr Val	Ser Arg	Ile Glu	Ser	Asn Glu	Gln Asp	Val	Gln Ser Thr
1025			1030			1035	
Pro Pro	Glu Asp	Thr Pro	Thr	Val Glu	Gly Lys	Val	Gly Asp Lys
1040			1045			1050	
Ala Glu	Met Leu	Thr Ser	Pro	His Ala	Thr Asp	Asn	Ser Glu Ser
1055			1060			1065	
Glu Ser	Gly Leu	Asn Pro	Thr	Asp Asp	Ile Lys	Thr	Thr Asp Gly
1070			1075			1080	
Val Val	Lys Glu	Gln Glu	Ile	Leu Gly	Gly Gly	Glu	Ser Ala Thr
1085			1090			1095	
Glu Thr	Ser Lys	Ser Asn	Leu	Glu Lys	Pro Lys	Asp	Val Glu Pro
1100			1105			1110	
Ser His	Glu Ile	Ser Glu	Pro	Val Leu	Ser Gly	Thr	Thr Gly Lys
1115			1120			1125	
Glu Glu	Ser Glu	Leu Leu	Lys	Ser Lys	Ser Ile	Glu	Thr Lys Gly
1130			1135			1140	
Glu Thr	Asp Pro	Arg Ser	Asn	Asp Gln	Glu Asp	Ala	Thr Asp Asp
1145			1150			1155	
Val Val	Glu Asn	Ser Arg	Asp	Asp Asn	Asn Ser	Leu	Ser Asn Ser
1160			1165			1170	
Val Asp	Asn Gln	Ser Asn	Val	Leu Asn	Arg Glu	Asp	Pro Ile Ala
1175			1180			1185	
Ser Glu	Thr Glu	Val Val	Ser	Glu Pro	Glu Asp	Ser	Ser Arg Ile
1190			1195			1200	
Met Thr	Thr Glu	Val Pro	Ser	Thr Thr	Val Lys	Pro	Pro Asp Glu
1205			1210			1215	
Lys Arg	Ser Glu	Glu Val	Gly	Glu Lys	Glu Ala	Lys	Glu Ile Lys
1220			1225			1230	

Val	Glu	Pro	Val	Val	Pro	Arg	Ala	Ile	Gly	Glu	Pro	Met	Glu	Asn
1235						1240					1245			
Ser	Val	Ser	Val	Gln	Ser	Pro	Pro	Asn	Val	Glu	Asp	Val	Glu	Lys
1250						1255					1260			
Glu	Thr	Leu	Ile	Ser	Glu	Asn	Asn	Gly	Leu	His	Asn	Asp	Thr	His
1265						1270					1275			
Arg	Gly	Asn	Ile	Ser	Glu	Lys	Asp	Leu	Ile	Asp	Ile	His	Leu	Leu
1280						1285					1290			
Arg	Asn	Glu	Ala	Gly	Ser	Thr	Ile	Leu	Asp	Asp	Ser	Arg	Arg	Asn
1295						1300					1305			
Gly	Glu	Met	Thr	Glu	Gly	Ser	Glu	Ser	Asp	Val	Gly	Glu	Leu	Gln
1310						1315					1320			
Glu	His	Asn	Phe	Ser	Thr	Gln	Gln	Lys	Asp	Glu	Lys	Asp	Phe	Asp
1325						1330					1335			
Gln	Ile	Ala	Ser	Asp	Arg	Glu	Lys	Glu	Glu	Ile	Gln	Lys	Leu	Leu
1340						1345					1350			
Asn	Ile	Gly	His	Glu	Glu	Asp	Glu	Asp	Val	Leu	Lys	Met	Asp	Arg
1355						1360					1365			
Thr	Glu	Asp	Ser	Met	Ser	Asp	Gly	Val	Asn	Ser	His	Leu	Tyr	Tyr
1370						1375					1380			
Asn	Asn	Leu	Ser	Ser	Glu	Glu	Lys	Met	Glu	Gln	Tyr	Asn	Asn	Arg
1385						1390					1395			
Asp	Ala	Ser	Lys	Asp	Arg	Glu	Glu	Ile	Leu	Asn	Arg	Ser	Asn	Thr
1400						1405					1410			
Asn	Thr	Cys	Ser	Asn	Glu	His	Ser	Leu	Lys	Tyr	Cys	Gln	Tyr	Met
1415						1420					1425			
Glu	Arg	Asn	Lys	Asp	Leu	Leu	Glu	Thr	Cys	Ser	Glu	Asp	Lys	Arg
1430						1435					1440			

Leu His Leu Cys Cys Glu Ile Ser Asp Tyr Cys Leu Lys Phe Phe
 1445 1450 1455

Asn Pro Lys Ser Ile Glu Tyr Phe Asp Cys Thr Gln Lys Glu Phe
 1460 1465 1470

Asp Asp Pro Thr Tyr Asn Cys Phe Arg Lys Gln Arg Phe Thr Ser
 1475 1480 1485

Met His Tyr Ile Ala Gly Gly Gly Ile Ile Ala Leu Leu Leu Phe
 1490 1495 1500

Ile Leu Gly Ser Ala Ser Tyr Arg Lys Asn Leu Asp Asp Glu Lys
 1505 1510 1515

Gly Phe Tyr Asp Ser Asn Leu Asn Asp Ser Ala Phe Glu Tyr Asn
 1520 1525 1530

Asn Asn Lys Tyr Asn Lys Leu Pro Tyr Met Val Val Asp Gln Gln
 1535 1540 1545

Ile Asn Val Val Asn Ser Asp Leu Tyr Ser Glu Gly Ile Tyr Asp
 1550 1555 1560

Asp Thr Thr Thr Phe
 1565

<210> 13
 <211> 24
 <212> DNA
 <213> artificial sequence

<220>
 <223> sequence is completely synthesized

<400> 13
 cctggagccc gtcagtatcg gcgg

24

<210> 14
 <211> 23
 <212> DNA
 <213> artificial sequence

<220>
 <223> sequence is completely synthesized

<400> 14
 ggtagcgacc ggcgctcagc tgg

23

<210> 15
<211> 25
<212> DNA
<213> artificial sequence

<220>
<223> sequence is completely synthesized

<400> 15
aaaagtgatg atagaaatgc ttgtg

25

<210> 16
<211> 25
<212> DNA
<213> artificial sequence

<220>
<223> sequence is completely synthesized

<400> 16
ttttgtgat cttacttatt tcacc

25

<210> 17
<211> 22
<212> DNA
<213> artificial sequence

<220>
<223> sequence is completely synthesized

<400> 17
cggaatcagg tttaaattcca ac

22

<210> 18
<211> 21
<212> DNA
<213> artificial sequence

<220>
<223> sequence is completely synthesized

<400> 18
agatcgtttt tcatcagggg g

21